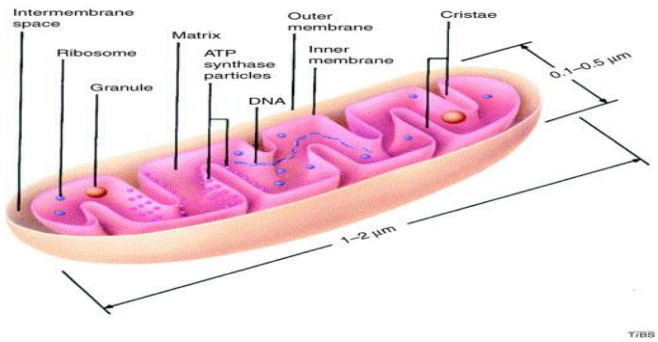
HUMAN ANATOMY & PHYSIOLOGY (ER20-12T)

UNIT-1: CELL

CASE STUDY 1: The Fatigued Medical Intern

Case Scenario:
A 24-year-old medical intern complains of persistent fatigue, muscle weakness, and shortness of breath even after minimal activity. Blood tests show normal hemoglobin levels but reduced ATP production in muscle cells.

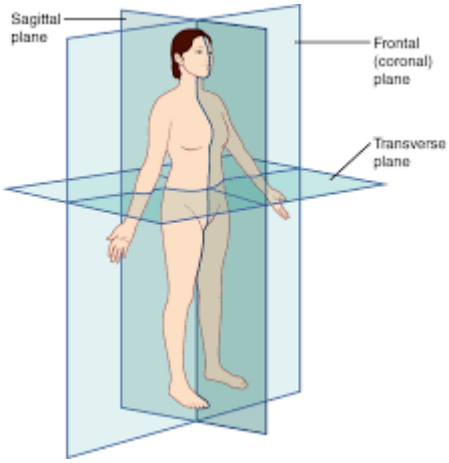


□ Puzzle Questions:

1. Which **cell organelle** is most likely defective?
2. Which branch of anatomy explains the **ultrastructure of this organelle**?
3. Which branch of physiology explains reduced energy production?

CASE STUDY 2: Confusing Directions in the Operation Theatre

Case Scenario:
A junior nurse misinterprets the instruction “Make an incision proximal to the wrist on the anterior surface of the forearm,” leading to confusion.

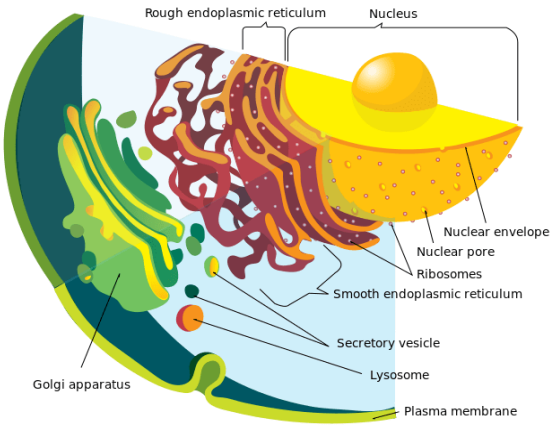


□ Puzzle Questions:

1. Define **proximal**, **anterior**, and **distal**.
2. Which type of anatomy deals with these terms?
3. Why is standard terminology essential in clinical practice?
4.

CASE STUDY 3: Liver Cell Under Stress

Case Scenario:
A patient with chronic drug intake shows liver dysfunction. Laboratory analysis reveals increased activity of detoxifying enzymes in liver cells.

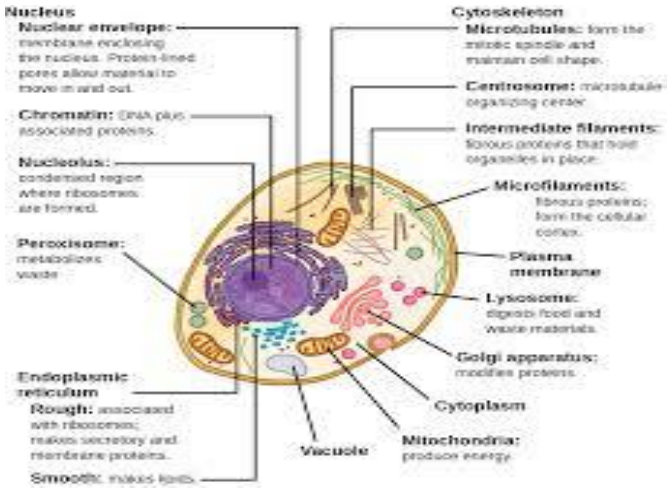


□ Puzzle Questions:

1. Which cell component is involved in drug detoxification?
2. What are **microsomes** derived from?
3. Which type of endoplasmic reticulum is involved?

CASE STUDY 4: A Cell That Cannot Divide

Case Scenario:
A tissue biopsy shows cells unable to undergo mitosis. Microscopy reveals absence of spindle formation.

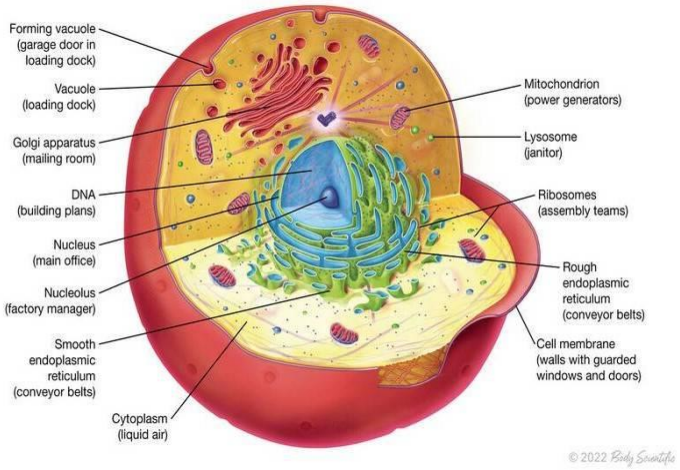


□ Puzzle Questions:

1. Which organelle is defective?
2. Which branch of anatomy studies this at cellular level?
3. Name the physiological process affected.

CASE STUDY 5: Oxygen Is Available but Energy Is Not

Case Scenario:
Despite adequate oxygen supply, a patient's muscle cells fail to generate sufficient energy. Electron microscopy shows damaged inner mitochondrial membranes.



□ Puzzle Questions:

1. Which mitochondrial structure is damaged?
2. Which step of cellular respiration is affected?
3. How does structure relate to function here?